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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/648,657	08/25/2000	Yoshimasa Chikama	55058(820)	5508

21874 7590 03/31/2003

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EXAMINER
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ALANKO, ANITA KAREN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 03/31/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/648,657	CHIKAMA ET AL.	
	Examiner	Art Unit	
	Anita K Alanko	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☐ Responsive to communication(s) filed on \_\_\_\_.

2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 1,2,4-9 and 11-15 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1,2,4-9 and 11-15 is/are rejected.

7) ☐ Claim(s) \_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All   b) ☐ Some \* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>8</u> .	6) <input type="checkbox"/> Other: _____

***Information Disclosure Statement***

The information disclosure statement filed 8/13/02 has been considered. The Korean document has been considered to the extent that it is disclosed in US 5,300,813.

The search report and Korean office action are missing from the IDS submission. The search report does not appear to be attached to amendment "a" filed Feb. 10, 2003.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claims 1-2, 4, 6-7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Takada et al (US 4,629,681).***

Takada discloses a method comprising (col.3, lines 6-38, col.4, lines 1-3):

forming a ground resin film <sup>6</sup> by applying a resin onto an insulating substrate 1 (a ceramic);

patterning the ground resin film (Fig.3, to form through-holes);

forming a low-resistance metal film 8 selectively on and over the patterned group resin film by a wet film formation technique, wherein the low-resistance metal film is a single layer film containing Cu or Ni, or a multilayer film containing Cu or Ni (Fig.4).

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***Claims 1-2, 4-9 and 11-13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by O'Sullivan et al (US 5,310,580).***

O'Sullivan discloses a method comprising (col.4, lines 22-50; col.5, lines 48-49):  
forming a ground resin film 10 by applying a resin onto an insulating substrate 12 (silicon, glass or ceramic);  
patterning the ground resin film (Fig. 1a shows that the film is selectively patterned);  
forming a low-resistance metal film 20 selectively on and over the patterned group resin film by a wet film formation technique, wherein the low-resistance metal film is a single layer film containing Cu or Ni, or a multilayer film containing Cu or Ni (Fig. 1c; col.6, lines 36+).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 1-2,4, 6-9, 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al (US 4,629,681) in view of JP 10-245,444 and Larsson et al (U.S. Patent No. 6,303,278 B1).***

The discussion of Takada from above is repeated here.

As to claims 8, 12 and 14 Takada does not teach to reduce metal ions by irradiating ultraviolet rays and KOH treatment.

JP 10-245,444 teaches a useful method for forming a metal film on polyimide with excellent adhesion force (paragraph [0004]), including: forming a polyimide resin film, followed by modifying the surface with KOH, reducing metal ions and plating (see Example, paragraphs [0016]-[0018] of translation).

It would have been obvious to one with ordinary skill in the art to form the metal on the polyimide film in the method of Takada using the method of JP 10-245,444 of modifying the polyimide surface and then plating because JP 10-245,444 teaches that it is useful for forming a film with excellent adhesion force.

Further, as to claim 14, JP 10-245,444 discloses to use a solution to reduce the nickel metal ions to nickel. Larsson teaches that an equivalent alternative technique for using a solution for the reduction is a photochemical technique (col.5, lines 34-41). Larsson teaches that ultraviolet light is useful for the reduction process (col.7, line 35). It would have been obvious to use ultraviolet light to reduce the metal ions to metal in the method of Takada modified by JP 10-245,444 because Larsson teaches that this is a useful, functionally equivalent technique compared to solution processing.

***Claims 1-2, 4-7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al (US 4,629,681) in view of Iwasaki et al (U.S. Patent No. 5,323,534).***

The discussion of Takada from above is repeated here.

As to claim 5, Takada does not teach add catalyst to the resin. Iwasaki teaches that adding a catalyst to resins is conventional in order to prepare for subsequent plating (col.11, lines 63-65). It would have been obvious to one with ordinary skill in the art to add the catalyst to the

resin in the method of Takada in order to save time and money and decrease contamination by not requiring multiple steps for forming catalyst films, and because it is a conventional technique in plating as taught by Iwasaki.

***Claims 1-2, 4, 6-7, 9, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al (US 4,629,681) in view of Kishimoto et al (U.S. Patent No. 5,516,983).***

The discussion of Takada from above is repeated here.

As to claim 15, Takada does not disclose the thickness of the polyimide layer. The method of Takada is directed to making a multilayer circuit board. Kishimoto teaches that polyimide layers of 0.3 microns, which is within the cited range, are useful thicknesses for electronic devices (col.6, example 3). It would have been obvious to one with ordinary skill in the art to form the polyimide layer in the method of Takada to the cited thickness because Kishimoto teaches that thicknesses on the same order of magnitude are useful for forming electronic devices.

***Response to Amendment***

The 35 U.S.C. 112, second paragraph rejection is withdrawn.

The rejections over Joshi are withdrawn.

Claims 1-2, 4, 6-7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Takada et al (US 4,629,681).

Claims 1-2, 4-9 and 11-13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by O'Sullivan et al (US 5,310,580).

Claims 1-2,4, 6-9, 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al (US 4,629,681) in view of JP 10-245,444 and Larsson et al (U.S. Patent No. 6,303,278 B1).

Claims 1-2, 4-7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al (US 4,629,681) in view of Iwasaki et al (U.S. Patent No. 5,323,534).

Claims 1-2, 4, 6-7, 9, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al (US 4,629,681) in view of Kishimoto et al (U.S. Patent No. 5,516,983).

### *Response to Arguments*

Applicant's arguments filed 8/13/02 have been fully considered. Examiner acknowledges that Joshi does not disclose the new limitation in claim 1 of forming a low-resistance metal film over the patterned ground resin film. The new references applied show metal film formed over the polyimide layer.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 703-305-7708. The examiner can normally be reached on Monday-Friday, 10:00 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9057 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

*Anita K. Alanko*

Anita K Alanko  
Primary Examiner  
Art Unit 1765



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March 21, 2003